Multiples of a Fraction

Spot mistakes, reason, and work backward

Name _____ **Date** _____ **Score** _____ / 8

QUICK REVIEW

Positive multiples of a fraction are $1, 2, 3, \ldots$ copies. For $\frac{1}{6}$, they begin $\frac{1}{6}, \frac{2}{6}, \frac{3}{6}$. With a step of $\frac{a}{b}$, each new multiple adds a pieces of size $\frac{1}{b}$.

Worked example

List the first four positive multiples of $\frac{2}{9}$.

1. Multiply the fraction by $1, 2, \ldots, 4$ in order. Each new step adds one more $\frac{2}{9}$.
2. $1 \times \frac{2}{9} = \frac{2}{9}$; $2 \times \frac{2}{9} = \frac{4}{9}$.
3. $3 \times \frac{2}{9} = \frac{6}{9}$; $4 \times \frac{2}{9} = \frac{8}{9}$.
Answer: $\frac{2}{9}, \frac{4}{9}, \frac{2}{3}, \frac{8}{9}$.

Practice Problems

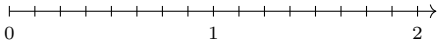
Show your thinking.

1. Rebuild a multiples list for $\frac{3}{10}$ with four terms.

2. Find the first three totals made by repeating $\frac{5}{6}$.

3. Write five positive multiples of $\frac{3}{7}$ to test the repeated-step rule.

4. Start at 0 and draw four equal jumps of $\frac{3}{8}$ to the right. Give every landing value.



5. A list for $\frac{3}{4}$ reads $\frac{3}{4}, \frac{6}{4}, \frac{10}{4}, \frac{12}{4}$. Repair one term.

6. The third positive multiple of a fraction is $\frac{9}{10}$. Find the fraction and its fourth multiple.

7. Is $\frac{7}{8}$ a whole-number multiple of $\frac{2}{8}$?

8. A robot moves $\frac{2}{3}$ m each step. Find the first step where its distance exceeds 2 m.

Answer Key

1. $\frac{3}{10}, \frac{3}{5}, \frac{9}{10}, 1\frac{1}{5}$.
2. $\frac{5}{6}, 1\frac{2}{3}, 2\frac{1}{2}$.
3. $\frac{3}{7}, \frac{6}{7}, 1\frac{2}{7}, 1\frac{5}{7}, 2\frac{1}{7}$.
4. $\frac{3}{8}, \frac{3}{4}, 1\frac{1}{8}, 1\frac{1}{2}$.
5. The third term should be $\frac{9}{4}$.
6. $\frac{3}{10}$; fourth multiple $\frac{12}{10} = 1\frac{1}{5}$.
7. No.
8. Step 4, at $\frac{8}{3} = 2\frac{2}{3}$ m.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Multiply the fraction by $1, 2, \ldots, 4$ in order. Each new step adds one more $\frac{3}{10}$.
2. $1 \times \frac{3}{10} = \frac{3}{10}$; $2 \times \frac{3}{10} = \frac{6}{10}$.
3. $3 \times \frac{3}{10} = \frac{9}{10}$; $4 \times \frac{3}{10} = \frac{12}{10}$.

Problem 2

1. Multiply the fraction by $1, 2, \ldots, 3$ in order. Each new step adds one more $\frac{5}{6}$.
2. $1 \times \frac{5}{6} = \frac{5}{6}$; $2 \times \frac{5}{6} = \frac{10}{6}$.
3. $3 \times \frac{5}{6} = \frac{15}{6}$.

Problem 3

1. Multiply the fraction by $1, 2, \ldots, 5$ in order. Each new step adds one more $\frac{3}{7}$.
2. $1 \times \frac{3}{7} = \frac{3}{7}$; $2 \times \frac{3}{7} = \frac{6}{7}$.
3. $3 \times \frac{3}{7} = \frac{9}{7}$; $4 \times \frac{3}{7} = \frac{12}{7}$.
4. $5 \times \frac{3}{7} = \frac{15}{7}$.

Problem 4

1. Multiply the fraction by $1, 2, \ldots, 4$ in order. Each new step adds one more $\frac{3}{8}$.
2. $1 \times \frac{3}{8} = \frac{3}{8}$; $2 \times \frac{3}{8} = \frac{6}{8}$.
3. $3 \times \frac{3}{8} = \frac{9}{8}$; $4 \times \frac{3}{8} = \frac{12}{8}$.

Problem 5

1. Each numerator must increase by 3.
2. From 6, the next is $6 + 3 = 9$.
3. $9 + 3 = 12$ confirms the fourth term.

Problem 6

1. Divide the third total into 3 equal groups: $9 \div 3 = 3$ tenths.
2. The repeated fraction is $\frac{3}{10}$.
3. The fourth is $4 \times \frac{3}{10} = \frac{12}{10}$.

Problem 7

1. Multiples of $\frac{2}{8}$ have numerators $2, 4, 6, 8, \ldots$.
2. The numerator 7 is odd and is not in that list.
3. $7 \div 2 = 3$ remainder 1, so no whole-number multiplier works.

Problem 8

1. Steps $1, 2, 3$ reach $\frac{2}{3}, \frac{4}{3}, \frac{6}{3} = 2$ m.
2. Step 3 equals 2 m, not more.
3. Step 4 reaches $\frac{8}{3} > 2$ m.

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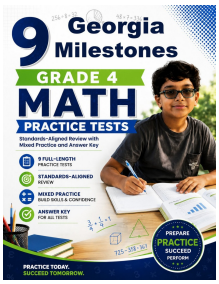

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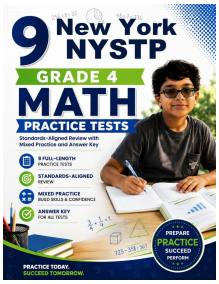

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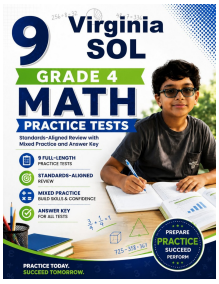

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